

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JYOTI MAZUMDER,
DWIGHT MORGAN and
TIMOTHY W. SKSZEK

Appeal No. 2004-2034
Application No. 09/917,096

ON BRIEF

MAILED

SEP 30 2004

U.S. PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS
AND INTERFERENCES

Before KIMLIN, PAK and JEFFREY T. SMITH, Administrative Patent Judges.

KIMLIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1-9 and 11-20, all of the claims remaining in the present application.

Claim 1 is illustrative:

1. A method of fabricating a component having improved properties, comprising the steps of:

- a) providing a substrate having a surface;
- b) providing a description of the component to be fabricated;
- c) heating a region of the component with a laser sufficient to form a localized meltpool;

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d) feeding material into the meltpool to deposit a layer having a physical dimension;

e) optically monitoring the physical dimension;

f) automatically controlling the physical dimension in accordance with the description of the article to be fabricated based upon feedback derived through the optical monitoring; and

wherein, compared to the substrate, the layer of material exhibits:

improved resistance to wear, corrosion,
or oxidation,

improved thermal conduction,

greater density, or

a different phase.

The examiner relies upon the following references as evidence of obviousness:

Lewis et al. (Lewis)	5,837,960	Nov. 17, 1998
Singer et al. (Singer)	5,875,830	Mar. 02, 1999
Parks	5,952,057	Sep. 14, 1999
Jeantette et al. (Jeantette)	6,046,426	Apr. 04, 2000

Appellants' claimed invention is directed to a method of fabricating a component, such as molds and tools, which uses a laser-assisted, direct metal deposition technique. The method also employs optical monitoring and controlling a physical dimension of the deposited layer with a feedback system.

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Appealed claims 1-9, 11 and 14-18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lewis in view of Jeantette. Claims 12 and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the stated combination of references further in view of Parks. In addition, claims 19 and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lewis in view of Jeantette and Singer.

In accordance with the grouping of claims set forth at page 3 of appellants' brief, the following groups of claims stand or fall together:

- I. Claims 1, 4, 5, 7, 8, 14 and 17;
- II. Claims 2 and 15;
- III. Claims 3 and 16;
- IV. Claims 6 and 18.

We have thoroughly reviewed each of appellants' arguments for patentability. However, we are in complete agreement with the examiner's reasoned analysis and application of the prior art, as well as his cogent disposition of the arguments raised by appellants. Accordingly, we will sustain the examiner's rejections for the reasons set forth in the answer, which we incorporate herein, and we add the following for emphasis only.

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There is no dispute that Lewis, like appellants, discloses a method for direct metal deposition that is controlled by a computer-aided design program in order to impart different properties to the article being coated, which article may be a tool or die. As recognized by the examiner, Lewis fails to teach the presently claimed optical monitoring of a physical dimension which allows for the feedback control of the dimension. However, we fully concur with the examiner that Jeantette evidences the obviousness of employing such a feedback control system in the process of Lewis. As explained by the examiner, the reference "teaches that optical monitoring for feedback control is used in order to prevent variations in layer thickness when depositing powder into a melt pool that a laser creates (column 8, lines 28-60)" (page 4 of answer, last paragraph). While appellants maintain that the feedback system of Jeantette is very different from that of appellants, in that a triangulation system is used to estimate the layer of thickness as a function of energy input, we are in complete agreement with the examiner that there is nothing in the claimed step of "automatically controlling the physical dimension . . ." which serves to distinguish over the feedback control system of Jeantette described at column 8,

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line 28 - column 9, line 5, and column 9, lines 43-67. In our view, the broadly claimed step of automatically controlling the physical dimension encompasses the feedback systems disclosed by Jeantette.

As for the separately argued claims of Group II, Group III, Group IV, Group V and Group VI, we will not burden the record by elaborating on the reasons set forth at pages 7-10 of the answer. Regarding separately argued claims 12 and 13 which define the different material as being more resistant to corrosion and oxidation than the component itself, respectively, appellants fail to address the thrust of the examiner's rejection which is based on the additional disclosure of the Parks reference. Similarly, appellants' separate argument for claim 19 misses the point of the examiner's rejection, mainly, that, based on Singer, it would have been obvious for one of ordinary skill in the art to use cooling channels and thermal boundaries in the tool of Lewis. We also agree with the examiner that the cooling channels of Singer would function as conductive heat sinks.


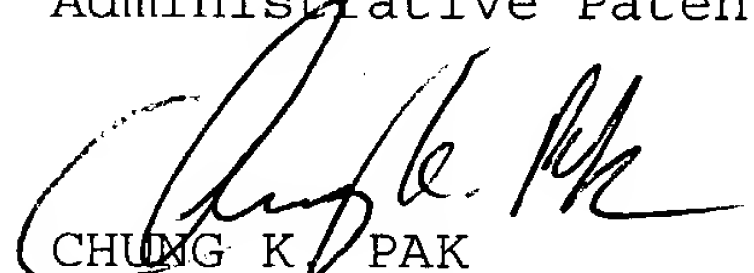
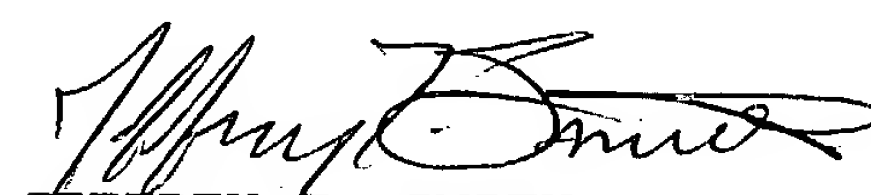
As a final point, we note that appellants base no arguments upon objective evidence of nonobviousness, such as unexpected results, which would serve to rebut the inference of obviousness established by the recited prior art.

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In conclusion, based on the foregoing, and the reasons well-stated by the examiner, the examiner's decision rejecting the appealed claims is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED


EDWARD C. KIMLIN)
Administrative Patent Judge)

CHUNG K. PAK)
Administrative Patent Judge)

JEFFREY T. SMITH)
Administrative Patent Judge)

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